Topics: Eutrophication and Zebra Mussels

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|  | Le Moal et al. | Fulweiler et al. | Colvin et al. | Idrisi et al. |
| What is eutrophication?  What factors contribute to eutrophication? | Eutrophication is overproduction of organic material (such as algae and bacteria) caused by humans’ inputs of P and N (p. 3)  High water temperatures, plenty of sunlight, and long water residence times are environmental factors that contribute to eutrophication (p. 3) | Humans have doubled the amount of reactive N and tripled the amount of P mobilized on Earth (p. 1)  Excessive nutrient loading has contributed to the widespread occurrence of eutrophication (p. 1). |  |  |
| How does eutrophication impact the environment and/or ecosystems? | Impairs inland and coastal waters (p. 2)  Toxic vegetal blooms, loss of biodiversity, anoxia, and mass mortality of benthic fauna (p. 4) | Eutrophication has led to the destruction of coastal ecosystems, loss of submerged aquatic vegetation, harmful algal blooms, depleted oxygen levels, dead zones, and loss of biodiversity (p. 1) |  |  |
| What are zebra mussels? |  |  | A non-native aquatic nuisance species of filter-feeding mollusks that usually inhabit firm underwater substrate (p. 2) | *Dreissena polymorpha* (p. 1)  Bottom-dwelling mollusks that alter food webs and ecosystems by “grazing” and distribution (p. 1) |
| How do zebra mussels impact the environment and/or ecosystems? |  |  | “One of the most deleterious non-native aquatic nuisance species in North America” (p. 2)  Effect habitat, water quality, food availability, algal abundance, etc. (p. 2) | Have the ability to alter aquatic food webs (p. 1)  Improve water quality and clarity over time by filter feeding (p. 7) |
| What are the long-term implications/trends of eutrophication and/or zebra mussels? | Declines in commercial fisheries | The recovery of eutrophic aquatic ecosystems can take decades and the ecosystem often will never return to its previous state because of changes in food-webs and the climate (p. 2)  Eutrophic aquatic systems are usually forever changed (p. 2)  Cleanup or recovery will probably cost billions of dollars (p.2) | Destruction of underwater habitat  Improved water clarity | Increased biomass but decreased biodiversity |

**Comments:**

Since the articles/reports didn’t specifically address (in any great detail, at least) the future implications of eutrophication and zebra mussels, I will provide my thoughts here.

**Eutrophication:**

* Eutrophic conditions are difficult to fully resolve
* The road to restoration is long and complex
* Billions of dollars will have to be spent
* Economies and environments will be changed by increasing eutrophication

**Zebra Mussels:**

* They are small and spread quickly
* They will rapidly overrun new bodies of water where they are introduced
* Research and studies will have to be conducted to determine the most effective management strategies